

REMARKS

Reconsideration and withdrawal of the rejections set forth in the above-mentioned Official Action in view of the foregoing amendments and the following remarks are respectfully requested.

Claims 1-3, 5, 6 and 8-11, 13 and 14 are now pending in the application, with Claims 1 and 8 being independent. Claims 4 and 12 have been cancelled without prejudice or disclaimer of the subject matter recited therein. Claims 1, 5, 8, 11 and 13 have been amended herein. The features of Claims 4 and 12 have been incorporated into Claims 1 and 8, respectively.

Claims 1, 3-6, 8 and 10-14 were rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 5,576,746 (Suzuki et al.). Claims 2 and 9 were rejected under 35 U.S.C. § 103 as being unpatentable over Suzuki et al. in view of U.S. Patent No. 6,126,266 (Numata et al.). These rejections are respectfully traversed.

As recited in independent Claim 1, the present invention relates to a recording apparatus for recording an image by applying ink on a recording medium with at least one recording head. The recording head discharges ink by applying thermal energy and the apparatus includes a timer, control means and a temperature sensor. The timer measures a recording downtime when an image-recording operation of the recording head is interrupted during the recording operation and is then resumed. The control means performs a temperature control of the recording head by applying drive pulses before the

resumption of the recording operation, in accordance with the length of the recording downtime measured by the timer. The temperature sensor detects a temperature of the recording head. With the control means, the recording head is heated before the resumption of the recording operation to a temperature of the recording head detected by the temperature sensor before the interruption of the recording operation and is further heated in accordance with the length of the measured recording downtime. Also, with the control means, the number of drive pulses to be applied to the recording head is increased as the recording downtime becomes longer.

As recited in independent Claim 8, the present invention relates to a control method of a recording apparatus for recording an image by applying ink on a recording medium with at least one recording head, the recording head discharging ink by applying thermal energy. The method includes the steps of measuring a recording downtime with a timer when an image-recording operation of the recording head is temporally interrupted during the recording operation and is then resumed, performing a temperature control of the recording head by applying drive pulses before the resumption of the recording operation in accordance with the length of the recording downtime measured by the timer and detecting a temperature of the recording head. In the step of performing the temperature control of the recording head, the recording head is heated before the resumption of the recording operation to a temperature detected by a temperature sensor before the interruption of the recording operation, and is further heated in accordance with

the length of the measured recording downtime. Also, in the step of performing the temperature control of the recording head, the number of drive pulses to be applied to the recording head is increased as the recording downtime becomes longer.

Suzuki et al. is directed to an image recording apparatus and addresses the situation where recording by the recording head is interrupted. The change in head temperature, which occurs during the interruption, can be compensated to maintain recording quality. This can be effected by detecting the temperature of the recording head and/or counting the interruption time, and then driving the recording head in a stand-by mode or correcting the image signal in accordance with the temperature difference. In particular, as understood by Applicants, Suzuki et al. detects the temperature before the interruption of the recording head and accesses a table, in which the number of pulses to be applied to the recording head based on the temperature and the recording time is set, before the resumption of recording. That is, the number of pulses to be applied is determined from the table based on the detected temperature and the recording downtime. Suzuki et al. does not i) first heat the head to the prior sensed temperature and ii) then further heat the head in accordance with the measured downtime. Accordingly, Suzuki et al. does not disclose or suggest that the recording head is heated before the resumption of the recording operation to a temperature of the recording head detected by a temperature sensor before the interruption of the recording operation, and is further heated in accordance with the length of measured recording downtime, as is recited in independent Claims 1 and 8.

Thus, Suzuki et al. fails to disclose or suggest important features of the present invention recited in the independent claims.

Numata et al. has also been reviewed, but is not believed to remedy the deficiencies of Suzuki et al. noted above with respect to the independent claims.

Thus, independent Claims 1 and 8 are patentable over the citations of record. Reconsideration and withdrawal of the § 103 rejections are respectfully requested.

This Amendment After Final Rejection does not raise new issues, is an earnest attempt to advance prosecution and reduce the number of issues, and is believed to clearly place this application in condition for allowance. This Amendment was not earlier presented because Applicants earnestly believed that the prior Amendment placed the subject application in condition for allowance. Accordingly, entry of this Amendment under 37 CFR 1.116 is respectfully requested.

For the foregoing reasons, Applicants respectfully submit that the present invention is patentably defined by independent Claims 1 and 8. Dependent Claims 2, 3, 5, 6, 9-11, 13 and 14 are also allowable, in their own right, for defining features of the present invention in addition to those recited in their respective independent claims. Individual consideration of the dependent claims is requested.

Applicants submit that the present application is in condition for allowance. Favorable reconsideration, withdrawal of the rejections set forth in the above-noted Office Action, and an early Notice of Allowability are requested.

Applicants' undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Mark A. Williamson', written over a horizontal line.

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